

YEAR

**Theme 3**  
*Modern  
Technologies*

**Homework  
Booklet**

Name

Form

# Introduction

In this theme you will explore various types of modern technologies ranging from virtual reality to communication technologies such as Wi-Fi and Bluetooth.

We will also look at accessibility and why this is important when creating hardware and/or software.

**At the bottom of each homework you will see an icon which will tell you how the homework will be assessed.**

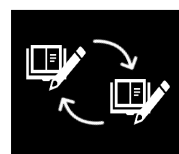
See below to find out what the icons mean:



*Self Assessment: You will mark your work at the start of next lesson.*  
**ENSURE YOU COMPLETE HOMEWORK AS MARKS WILL BE COLLECTED IN!**



*If you see this on a homework it means there will be an Edmodo quiz on the homework next lesson.*  
**SO MAKE SURE YOU REVISE AND READ THE INFORMATION CAREFULLY!**



*If you see this on a homework it means you will be peer assessing the homework next lesson with another student.*  
**MAKE SURE YOU HAVE YOUR HOMEWORK COMPLETED SO YOU CAN SWAP WITH ANOTHER PUPIL!**

**Failure to submit homework on time will result in a 45-minute detention.**

**If you lose your homework booklet you may be charged for a replacement and you MUST catch-up on any homework's lost!**

***Stuck? Got a question? Email your teacher.***

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# H/W 1 – Self Driving Cars

Due:

Answer the questions below in good detail to create a short report on Autonomous Vehicles/Self-Driving Cars. You may wish to use the notes made on Edmodo for other modern technologies.

What is it? (Describe self-driving cars and the technology behind them)

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What are the benefits autonomous vehicles bring?

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How could it be a threat?

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What is your opinion on self-driving cars.

To conclude, \_\_\_\_\_

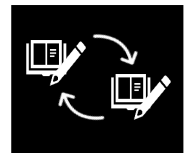
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Tick criteria met:

Detail	
Full sentences	
Spelling	
Grammar	

# H/W 2 – Wi-Fi/Data

Due:

Complete the table below using the notes written in lesson. You may wish to use Edmodo to help you.

Wi-Fi	Mobile Data
<p>Advantages</p> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>	<p>Advantages</p> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>
<p>Disadvantages</p> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>	<p>Disadvantages</p> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>

*Add any additional information using purple pen when the teacher has been through the answers.*





# H/W4 – Spellings

Due Date:

Practice spelling the words below. You will have a spelling test next lesson!  
Write out the words 5 times. Pay attention to the spellings.

**Artificial**

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**Intelligence**

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**Virtual**

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**Reality**

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**Autonomous**

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**Vehicles**

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**Modern**

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**Technologies**

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**Accessibility**

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# H/W5 – Accessibility

Read the article below. You will be quizzed next lesson.

## What is accessibility?

And in what ways can a website be 'inaccessible'?

- Accessibility is the word used to describe whether a product (for example, a website, mobile site, digital TV interface or application) can be used by people of all abilities and disabilities.
- For instance, a website is accessible if all people, including disabled and elderly people, can use it. At the BBC, we aim to ensure that all of our products are informative and entertaining to use as well as being accessible - this is called usability.
- On a website, accessibility depends on how a person's disability affects the way they perceive information on a page and how they navigate within and between pages. Elements that affect accessibility include:
  - [For people who can't see very well](#): the colours and the contrast between colours; the size of text; the choice of fonts
  - [For people who are blind](#): how a screenreader interprets the elements on a page (for example, alt tags for images, and title tags for links); the inclusion of audio description for video content
  - [For people who can't hear very well](#): how any audio content is represented graphically (for example, including subtitles or signing on video content)
  - [For people who find a keyboard or mouse hard to use](#): the ease with which someone can navigate to parts of the page (for instance, by tabbing); auto-completion of forms
  - [For people who find words difficult](#): the length of sentences and paragraphs; the complexity of the vocabulary; the choice of fonts and size of text; the availability of spelling checkers and word prediction; the opportunity to have text read out loud



Edmodo

Quiz Score attained: \_\_\_\_ / \_\_\_\_

### Artificial Intelligence

**What is it?** Area of computer science that emphasizes the creation of intelligent machines that work and react like humans.

#### Benefits it can bring

- AI has a low error rate compared to humans, if coded properly.
- Replace humans in repetitive, tedious tasks.
- Don't need to sleep, rest or take breaks

#### Threats

- Can cost a lot of money and time.
- Leads to unemployment of certain jobs
- Can lead to destruction in the wrong hands.

### 3D Printing

**What is it?** Layers of a material are built up into a 3D solid. The most common materials used are wax, starch or some thermoplastics. Complex shapes can be created.

#### Benefits it can bring

- Customisation - can print any design no matter how complex
- Increase demand for engineers

#### Threats

- Decrease in manufacturing jobs
- Violation of copyright – anyone who gets hold of a blueprint will be able to counterfeit products easily.
- Production of dangerous items – plastic knives and guns etc.

### Virtual Reality

**What is it?** an interactive computer-generated experience taking place within a simulated environment.

#### Benefits it can bring

- Helps with Visualisation and simulations e.g. driving
- Can be used in education and in workplace
- Makes tourism and visiting sites more easy by giving a detailed view.

#### Threats

- Ineffective human connections – only about you and the software, can lead to loss of realization.
- Getting addicted to the virtual world.
- Motion sickness due to headset

**Modern Technology** - An advancement of old technology.

**Impact** – The effect ‘technology’ has had on society and industries

**Threat** – Risks associated with modern technology.

**Ethical Issues** – A problem that requires a person to choose between alternatives that could be right (ethical) or wrong (unethical).

**Mobile Data** – way that mobile device users can gain wireless access to the internet using network providers e.g. EE or o2

**WiFi** – Technology for radio wireless networking of devices (allows wireless access to the internet)

**Hotspot**– When a mobile device uses mobile data to create a WiFi connection for other users

**Broadband** – cabled transmission technique to deliver internet to households

**Cloud Computing** – using a network of remote servers hosted on the Internet to store data.

**Accessibility**– creating products that are usable by people with the widest possible range of abilities

WiFi	Mobile Data
<b>Advantages</b> <ul style="list-style-type: none"> <li>• Easy to set up yourself at home and connect many devices. Also reliable connection.</li> <li>• Internet can be accessed from anywhere,</li> <li>• Add multiple devices on same WiFi network</li> <li>• Free at certain locations, cheaper than mobile data</li> <li>• WiFi calling if no mobile network</li> <li>• Free messaging (iMessage, WhatsApp etc)</li> </ul>	<b>Advantages</b> <ul style="list-style-type: none"> <li>• Greater availability</li> <li>• 4G can deliver speeds similar to WiFi</li> <li>• 4G has greater speed over distance</li> <li>• SMS text messaging</li> <li>• Helps GPS to provide a precise location</li> <li>• Internet can be accessed from anywhere, i.e. Bus, train, coffee-shop, super market, etc.</li> </ul>
<b>Disadvantages</b> <ul style="list-style-type: none"> <li>• Can be hacked if not configured properly.</li> <li>• Limited distance</li> <li>• Interference can affect speeds</li> </ul>	<b>Disadvantages</b> <ul style="list-style-type: none"> <li>• Costs can vary and network operator packages vary enormously, sometimes depending on phone.</li> <li>• A lot of data can be used for streaming rich media</li> </ul>

**Standard broadband** - sometimes called cable broadband or ADSL broadband.

- This uses copper cables to transmit data
- Cheaper but can get some interference.

### Fibre Optic broadband

- This uses cables made from glass to transmit data
- Expensive but has super speed!

#### Accessibility Hardware

- Puff-sip switch
- Foot control/foot mouse
- Eye typer
- Braille keyboard and printer
- Speakers/microphones
- Mobile phones/Smart watches

#### Accessibility Software

- Built into operating systems on desktop and mobile
- Resizing text/changing colour/zoom
- Siri/Alexa/Google Assistant (Voice assistants)
- Predictive text
- Screen readers/overlays
- Web accessibility
- ALT tags on images (descriptions)

**Cloud services** – *Storing files and data, images*

(Google Drive and Dropbox, Google Photos, iCloud)

**Streaming** - Netflix, Apple music, Spotify and PlayStation Now